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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
KRUER, STEFAN	
ART UNIT	PAPER NUMBER
3654	
MAIL DATE	DELIVERY MODE
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/612,334	WITTUR ET AL.	
	Examiner	Art Unit	
	Stefan Kruer	3654	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *19 October 2010*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *22 - 42* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *22 - 42* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *01 November 2006* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *19OCT10*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Specification

The amendment to the specification as filed **01 November 2006** ***remains*** objected to for failing to provide a listing and review of New Figures 6 – 7 [as improperly filed via a "Replacement Sheet" in lieu of "New Sheet"], in response to the former Examiner's objections to the drawings in the office action mailed **5 July 2006**.

Drawings

Though Figures 6 – 7 were improperly filed via a "Replacement Sheet" in lieu of "New Sheet", the drawings filed on 1 November 2006 are acceptable.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 22 – 30 and 35 - 42 are rejected under 35 U.S.C. 103(a) as being unpatentable over Berkovitz (3,838,752) in view of Aulanko et al (5,429,211) and in further view of Nation (4,158,283).

Re: **Claims 22 and 36 - 42**, Berkovitz discloses the prior art of a gearless hoisting rope-operated elevator (Fig. 6A), the elevator comprising:

- an elevator car (20, Fig. 1);
- a counterweight (22);
- a plurality of parallel hoisting ropes (24) that are not enclosed by a common sheath;
- elevator car guide rails (not depicted, understood);
- counterweight guide rails (not depicted, understood);
- a drive sheave (82, Fig. 6A); and

- a counter sheave (84);
- wherein the elevator car is configured to accommodate human passengers,
- wherein the elevator car and the counterweight are supported by the plurality of parallel hoisting ropes, wherein the elevator car is guided by the elevator car guide rails, wherein the counterweight is guided by the counterweight guide rails, wherein the drive sheave and the counter sheave are spaced apart from each other,
- wherein the plurality of parallel hoisting ropes wraps at least partially around the drive sheave a first time, at least partially around the counter sheave a first time, at least partially around the drive sheave a second time, and at least partially around the counter sheave a second time,
- wherein the drive sheave is configured to act on the plurality of parallel hoisting ropes in order to move the elevator car and the counterweight,
- wherein each hoisting rope of the plurality of parallel hoisting ropes is a steel hoisting rope (Col. 3, L. 29 - 35),
- wherein the drive sheave includes semicircular grooves (108, 108', Fig's 9A-9B),
- wherein the semicircular grooves include undercut portions (110, 110'),
- wherein the drive sheave is configured so that the plurality of parallel hoisting ropes runs in the semicircular grooves;
- wherein a plane in which the drive sheave rotates is oriented differently than planes defined by side wails of the elevator car, and
- wherein a plane in which the counter sheave rotates is oriented differently than the planes defined by the side walls of the elevator car (e.g., both as in a respective plane of rotation is perpendicular to a plane of said side wall); however,

though Berkovitz discloses his undercut portions having a ratio of width to rope diameter of 0.375 and the diameter of his sheave being 25% less than that of the prior art of geared systems in relation to a given hoisting rope diameter (Col. 7, L. 25 - 32), and wherein a diameter of drive sheave to a nominal diameter of a conventional steel

hoisting rope is greater than or equal to 40:1 is well known in the art, Berkovitz is silent with respect to each hoisting rope of the plurality of parallel hoisting ropes has a nominal diameter greater than 5 mm and less than 7 mm and his elevator system is without a machine room.

Attention is directed to Aulanko et al who teach an elevator without machine room, the elevator comprising:

- a plurality of hoisting ropes (3);
- elevator car guide rails (10);
- counterweight guide rails (11);
- wherein a elevator car (1) is guided by the elevator car guide rails (10),
- wherein a counterweight (2) is guided by the counterweight guide rails (11),
- wherein their drive sheave (7) is driven by a gearless drive machine (6);

It would have been obvious to one of ordinary skill in the art to modify the reference of Berkovitz with the teaching of Aulanko et al to provide the elevator system of Berkovitz with a gearless drive mounted on guide rail(s) or on a beam or frame within a hoistway, thereby without a machine room, for savings in space.

However, Aulanko et al are silent with respect to their plurality of hoisting ropes each having a diameter in a range of 5 mm to 7 mm.

Attention is directed to Nation who teaches wherein each hoisting rope of an elevator, hoist crane of mine shafts (Col. 9, L. 7) is a steel hoisting rope, wherein each hoisting rope has a nominal diameter greater than 5 mm and less than 7 mm, ("1/4-inch stainless steel hoisting rope, Col. 7, L. 11 – 58; Col. 10, L. 13 – 23 & Col. 1, L. 49 - 65), whereby Nation teaches his invention regarding the use of titanium alloyed hoisting ropes for greater fatigue strength and lesser percent-elongation when compared to conventional carbon and stainless steel hoisting ropes.

Nevertheless, ***Nation reviews comparative performances of ¼-inch wires of titanium alloy and ¼-inch wires of stainless steel***, thereby the generation of smaller diameter hoisting ropes comprising said wires that "… overcomes a stiffness problem to

provide flexibility, the essential system handling characteristic", thereby enabling a reduced D/d ratio of 25 to 30 (Col. 6, L. 40) as well.

[Again, while stating a preference for titanium, Nation states that "It should be recognized that the superiority of steel's greater tensile strength even though the old manners of imposing a load limitation of one-fifth (1/5) the ultimate tensile strength is indeed a drastic limitation not required by titanium cable" (Col. 10, L. 20 – 24), which, again, does not preclude the applicability - with limitations vis-à-vis wires fabricated from titanium - for stainless steel ropes of the diameter of the claimed invention and reviewed with excerpts above.]

It would have been obvious to one of ordinary skill in the art to modify the invention of Berkovitz and Aulanko et al with the teaching of Nation to provide a plurality of hoisting ropes, each having a diameter in a range of 5 mm to 7 mm, to provide greater flexibility in achieving a small traction sheave diameter and therewith a smaller D/d ratio for savings in drive capacity and overall machine space.

Re: **Claim 23**, Berkovitz and Aulanko et al are silent concerning wherein the ratio of the diameter of the drive sheave to the nominal diameter of each hoisting rope of the plurality of hoisting ropes is substantially 34:1.

It would have been obvious to one of ordinary in the art at the time of the invention was made to make the ratio of a diameter of the drive sheave to a nominal diameter of hoisting rope disclosed by Berkovitz substantially 34:1, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable range involves only routine skill in the art. *In re Aller*, 105 USPQ 233. Minor differences between the prior art and a claimed device may be a matter of design choice absent evidence to the contrary. See *In re Rice*, 341 F.2d 309, 314 (CCPA 1965). Where the difference between the claimed invention and the prior art is some range or other variable within the claims the applicant must show that the particular range is critical, generally by showing that the claimed range achieves

Re: **Claim 26**, Berkovitz discloses wherein an axis of rotation of the drive sheave is parallel to an axis of rotation of the counter sheave.

Re: **Claim 27**, Berkovitz discloses wherein a plane in which the drive sheave rotates is displaced from a plane in which the counter sheave rotates.

Re: **Claim 28**, Berkovitz discloses wherein the drive sheave and the counter sheave are arranged horizontally with respect to each other, or

wherein the drive sheave and the counter sheave are arranged vertically with respect to each other.

Re: **Claim 29**, Berkovitz discloses wherein the elevator is configured so that the drive sheave is higher than the counter sheave.

Re: **Claim 30**, Berkovitz discloses wherein a suspension ratio of the elevator car is 1:1 or 2:1.

Re: **Claim 35**, Berkovitz discloses wherein the counter sheave serves as a distancing deflection sheave.

Re: **Claims 24 and 25**, Berkovitz is silent concerning wherein the elevator is configured for elevator car loads less than or equal to 2,000 kg and wherein the elevator is configured for elevator car loads greater than or equal to 300 kg and less than or equal to 1,000 kg.

Aulanko et al teach wherein an elevator is configured for elevator car loads less than or equal to 2,000 kg, and wherein the elevator is configured for elevator car loads greater than or equal to 300 kg and less than or equal to 1,000 kg, Column 6, Lines 41-45.

It would have been obvious to one of ordinary skill in the art at the time of the invention to make to configure the elevator car load disclosed by Berkovitz for elevator car loads less than or equal to 2,000 kg and greater than or equal to 300 kg and less than or equal to 1,000 kg as taught by Aulanko et al to allow for a motor with a very flat construction optimizing the space within a hoistway.

Furthermore, It would have been obvious to one of ordinary in the art at the time of the invention was made to configure the elevator car load disclosed by Berkovitz for elevator car loads less than or equal to 2,000 kg and greater than or equal to 300 kg and less than or equal to 1,000 kg, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable range involves only routine skill in the art. *In re Aller,* 105 USPQ 233. Minor differences between the prior art and a claimed device may be a matter of design choice absent evidence to the contrary. See *In re Rice,* 341 F.2d 309, 314 (CCPA 1965). Where the difference between the claimed invention and the prior art is some range or other variable within the claims the applicant must show that the particular range is critical, generally by showing that the claimed range achieves unexpected results relative to the prior art range. *In re Woodruff,* 919 F.2d 1575, 1578 (Fed. Cir. 1990).

Claims 31 - 34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Berkovitz in view of Aulanko et al and Nation, as applied to Claim 22, and further in view of Hollowell et al (WO 99/43595).

Re: **Claim 31**, Berkovitz, Aulanko et al and Nation are silent concerning wherein the drive sheave and the counter sheave are operatively attached to the elevator car.

Hollowell et al teach wherein a drive sheave 30 and a counter sheave 34 are operatively attached to a elevator car 16.

It would have been obvious to one of ordinary skill in the art at the time of the invention to operatively attach the drive sheave and the counter sheave of the drive sheave drive disclosed by Berkovitz to the elevator car as taught by Hollowell et al to accommodate the elevator components within the environmental restraints of the shaft.

Re: **Claim 32**, Berkovitz discloses wherein a suspension ratio of the elevator car 20 is 1:1, 2:1, or 4:1.

Re: **Claims 33 and 34**, Berkovitz and Aulanko et al are silent concerning wherein the drive sheave is operatively attached to a top or bottom of the elevator car, and

wherein the counter sheave is operatively attached to the top or bottom of the elevator car.

Hollowell et al teach wherein their drive sheave is operatively attached to a top or bottom of the elevator car, and

wherein the counter sheave is operatively attached to the top or bottom of the elevator car, referred to in Claims 2 and 3.

It would have been obvious to one of ordinary skill in the art at the time of the invention to operatively attach the drive sheave and the counter sheave of the drive sheave drive disclosed by Berkovitz on the top or bottom of the elevator car as taught by Hollowell et al to accommodate the elevator components within the environmental restraints of the shaft.

Response to Arguments

Applicant's arguments filed 19 October 2010 have been fully considered but they are not persuasive.

Examiner takes note that applicant has not responded to the objections to the drawings and specification as made in the previous office action mailed 21 July 2010 and repeated above. Claimed subject matter encompassed by the objections to the specification is notably that of the range of width of an undercut portion of the sheave as argued by applicant.

With respect to the applicant's argument commencing on Page 13, 3rd paragraph, with respect to applicant's IDS filed on 15 October 2009 in which multiple Japanese references were cited, yet neither they nor two of three Japanese office actions were considered by Examiner, as commented on the IDS, the lack of consideration of the Japanese references was attributable to a respective missing statement of relevance of each of said references whereby the two office actions were not considered because they were first thought as not having been provided, yet upon further review it is noted that only translations of said office actions are not provided.

Therefore, applicant's IDS filed on 19 October 2010 is appended to this office action with the prior art indicated as considered; however, the Japanese office actions are indicated again as not being considered due to lack of translations.

In response to applicant's arguments commencing on Page 15, 2nd paragraph with respect to the relevance and disclosure of Nations, applicant's attention is directed to the additional, underlined statement within the body of this rejection above. Again, that Nations teaches the comparative performance of hoisting ropes fabricated from ¼ -inch diameter titanium wires to those fabricated from respective ¼ -inch diameter stainless- and carbon steel wires does not preclude the viability of hoisting ropes fabricated stainless steel wires for a given ambient environment and operating specifications. Furthermore, a design load, travel height or other pertinent operating information that would obviate the relevance of the stainless steel wires as reviewed by Nations have not been disclosed by the instant invention or argued by applicant.

Again, applicant's assertion on Page 18, 2nd paragraph, that "... although Nation discusses ¼ -inch cables of stainless steel, Applicants submit that discussion relates to the tests conducted, not to the steel cables for hoists, cranes, mine shafts, and elevators that... have a 1 inch (25.4 mm) diameter. Thus, Applicants submit the ... allegation that Nation "teaches wherein each cable of an elevator, hoist crane of mine shafts (Col. 9, L. 7) is a steel cable, wherein each cable has a nominal diameter greater than 5 mm and less than 7 mm" (Sixth OA, p. 4) is incorrect on its face" is appreciated; however, the ratio of sheave diameter to nominal diameter as taught by Nations is directed to titanium ropes of ¼ -inch diameter, ***for which Nations reviews the comparative performance of identical diameter ropes formed from stainless- and carbon steel wires and applicable to said ratio as well*** that, while inferior to titanium for reasons of interest to Nations, does not preclude their relevance as substantiated by their incorporation in the comparisons.

In response to applicant's arguments commencing on Page 19, final paragraph, with respect to the primary reference, Berkowitz, disclosing "...diameters for hoisting ropes of 1.2 inches (30.5 mm), 3/4 inches (19.1 mm), 5/8 inches (15.9 mm), 9/16 inches

(14.3 mm), and 1/2 inch (12.7 mm)... [and] that each of these diameters is much larger than the claimed "greater than 5 mm and less than 7 mm"", Examiner concurs with applicant's review, for which applicant's attention is again directed to the disclosure of Nations *as well as applicant's review of Nations as being allegedly directed to a comparison of conventional steel ropes having a diameter of "1 inch (25.4 mm)", which is a significantly larger diameter than that of four (4) of the five (5) embodiments of Berkowitz's conventional hoisting ropes, wherein Nations reviews that with conventional hoisting ropes "...primary loads are normally limited to either one-fifth (1/5) or one-sixth (1/6) of the ultimate cable strength" attributable to the "... commonly used steel materials, carbon and stainless (corrosion resistant) are non-linear in load deflection"*

Consequently and again, though Nations subsequently teaches the preferential features of ¼ -inch cables of titanium affording the aforementioned ratio of sheave to nominal rope diameter of applicant's invention, Nations teaches his preference by way of comparison to ¼ -inch cables of stainless steel for which said ratio applies as well, though of lesser load capacity in comparison to that of the titanium embodiment.

With respect to the undercut portions that applicant argues on Page 24, first paragraph, with respect to Berkovitz who "... does not disclose "wherein the undercut portions have a width greater than 1 mm and less than 3 mm", as recited in amended independent claims 22 and 36"", Berkovitz, as reviewed above and identically in the previous office action, discloses "... his undercut portions having a ratio of width to rope diameter of 0.375 and the diameter of his sheave being 25% less than that of the prior art of geared systems in relation to a given hoisting rope diameter (Col. 7, L. 25 - 32)", which, in combination with the teachings of Nations, accords the unsubstantiated, thereby non-critical, undercut portions of applicant's claimed invention.

Furthermore, with respect to applicant's arguments commencing on Page 21, 2nd paragraph, as to "... Berkovitz discusses grooves with undercut portions having widths of 3/8 inches (9.5 mm) and 3/16 inches (4.8 mm)....Applicants submit that each of these diameters is much larger than the claimed "greater than 1 mm and less than 3 mm" ", as reviewed in the preceding paragraph and in the body of the rejection (Pg. 3),

Berkovitz is cited for disclosing his inventive "... ratio of width [of undercut portion] to rope diameter of 0.375...", wherein the conventional ratio [of undercut portion] for "... larger diameter cables of ...1/2-inch ...." was 0.75, wherein said reduction in width is attributable in part to the use of a traction enhancing lubricant (Col. 1, L. 31 – 67) and, contrary to applicant's argument on Page 22, 2nd para., within the realm of DW roping.

Therefore, the disclosure of Berkovitz, in view of the teachings of Nations, yields "... a width of greater than 1 mm and less than 3 mm..." based on the aforementioned ratio of 0.375 and the Nations' rope diameter of ¼ -inch.

With respect to applicant's argument commencing on Page 26, final para., that "... wherein a ratio of a diameter of the drive sheave to a nominal diameter of each hoisting rope of the plurality of parallel hoisting ropes is greater than or equal to 30:1 and less than 40:1.... Examiner was unable to find any reference in at least U.S. Classification 187/XXX or 184/XXX that discloses, teaches, or suggests either of these recitations..." said argument is rebuked by applicant's own review of Nations as excerpted above.

Applicant's attention is directed to additional prior art as cited for pertinence below.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Feyrer, "Drahtseile Bemessung, Betrieb, Sicherheit", is cited for reference of hoisting ropes formed from stainless steel wires having a diameter in the range of the instant invention.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Stefan Kruer whose telephone number is 571.272.5913. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Mansen can be reached on 571.272.6608. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Michael R Mansen/
Supervisory Patent Examiner, Art Unit 3654

SHK